BIBLIOGRAPHICAL NOTICES.

XIII. *An Account of the Life, Lectures, and Writings of* WILLIAM CULLEN, M. D. Professor of the Practice of Physic in the University of Edinburgh. By JOHN THOMSON, M. D., F. R. S. L. and E. Professor of Medicine and General Pathology in the University of Edinburgh. In two volumes, 8vo. Vol. I. Edinburgh and London, 1832.

Dr. Thomson very properly remarks, that among the many eminent teachers of medicine to whom Great Britain has given birth, there is no one who, by his lectures and writings, has had a greater influence on the opinions and practice of medical men, and on the general progress of medical science than Dr. Cullen, and that it may be justly, therefore, matter of surprise, that so many years have been suffered to elapse since the death of that distinguished man without the publication of any authentic or correct history of his life and studies. This desideratum Dr. Thomson has now undertaken to fulfil from Dr. Cullen's papers, consisting of letters from private friends, sketches of essays, notes of lectures, and medical consultations, which were placed in his hands after the death of Dr. Cullen's eldest son, Lord Cullen, who had entertained the laudable desire of writing a biographical memoir of his father.

The work under notice, of which the first volume only has as yet appeared, is replete with interest, and will contribute largely to enhance the reputation of the author, from the great erudition, and the familiar acquaintance with the doctrines of Dr. Cullen and of his predecessors, it displays, and the accurate exposition of the state of medical science during the eighteenth century therein contained. It will also have another and equally important effect—that of raising still higher the already great reputation of Dr. Cullen himself. During the latter part of the life, and for some time after the death of that illustrious professor, his authority stood higher than that of any other physician, either in Great Britain, or on the continent. His writings were in the hands of every physician, in the original or in translations;—his doctrines were received and commented upon by teachers, students, and practitioners, as the only true and philosophical ones; and his First Lines, his Nosological Synopsis, and his Lectures on the materia medica were considered as indicating the accurate and extensive clinical knowledge of their author, and as the best possible guides for practising physicians. But time, which operates so many changes, did not spare the reputation of Dr. Cullen. His doctrine gradually, and very naturally gave way to others based upon the discoveries made since his time; and for many years his works have been superseded by others of a later date, and presenting a view of the improved state of physiological and pathological sciences. We do not think we exaggerate, when we say, that on the continent and in this country, they are now principally considered as objects of literary curiosity by the inquiring student; that the authority of their author on theory and practice has insensibly been replaced by that of more modern leaders, that the services he has rendered to the science of medicine have ceased to be as highly prized as they were formerly, and that there are not wanting those who regard him as little better than a theorist. The present work, however, presents in a much more favourable light, than had been before done, the merits of Dr. Cullen, and will probably occasion a change of sentiment in his behalf. We confess that for ourselves, a perusal of its contents has made us feel much more disposed than we had heretofore been to coincide with those who regard him as eminently distinguished for the accuracy of his powers of observation, for the acuteness of his discrimination, for the soundness of his judgment, for the comprehensiveness of his genius, and for the indefatigableness of his diligence "in collecting materials for the operation of his intellect."

Dr. Cullen was the second son of William Cullen, an Attorney of the Parish of Bothwell, and the factor to the Duke of Hamilton. He was born at Hamilton, a small town on the Clyde, about ten miles above Glasgow, on the 15th of April, 1710. After obtaining the rudiments of his literary education at the Grammar School of Hamilton, he was sent to prosecute his studies at the University of Glasgow. On commencing his medical studies, Dr. C. was bound apprentice to Mr. John Paisley, of Glasgow, and received from that gentleman, then engaged in extensive practice in that city, his early professional instruction. He remained two years with Mr. Paisley, and in 1729 proceeded to London, where he embarked in the character of surgeon on board of a merchant vessel, bound for the West Indies and Spanish America. After an absence of about eighteen months, six of which he spent at Porto-Bello, he returned to England, and entered the shop of Mr. Murray, an apothecary of London, with the view to prosecute the study of pharmacy and materia medica. In 1731, or 1732, he returned to Scotland to arrange some domestic matters, and resided two years in the family of a relative, where he spent his leisure time in assiduous application to his medical studies. In 1734-5 and the subsequent years we find him at Edinburgh, attending the lectures of Monro, (the first,) St. Clair, Rutherford, Innes, Plummer, and Alston, who then occupied the various chairs in the school of that city. During this time, Dr. Cullen formed an association with some of his fellow students, for the purpose of discussing such questions as the course of their studies suggested. This association soon grew in importance, and was the origin of the Medical Society of Edinburgh, an institution which continues to this day to flourish, and is said to have exercised on the progress of medical science in Great Britain, an influence perhaps superior in many respects to that of the school itself.

In 1736 Dr. Cullen commenced the practical duties of his profession as surgeon in his native town, and soon obtained the confidence of the principal inhabitants, and of the Duke of Hamilton himself, whom he attended in an alarming fit of illness. While residing in Hamilton, Dr. Cullen became the friend and medical preceptor of the late Dr. William Hunter—

> "Whose disposition, genius, and love of study were every way congenial with his own. Their intercourse soon gave rise to a friendship that continued uninterrupted till the death of Dr. Hunter in the year 1783."

During his residence in Hamilton Dr. Cullen was twice elected a magistrate of that place, first in the year 1738, and again in 1739, in conjunction with a relation of his own, Mr. Hamilton of Fairholm, and took an active share in the agricultural improvements beginning at that time to be introduced into the west of Scotland. He married in 1741 Anna Johnstone, daughter of the Reverend Mr. Johnstone, Minister of Kilbarchan, in the county of Renfrew; and continued to practice as a physician in Hamilton till the autumn of 1744, when he removed, with his family, to Glasgow. Here he formed the intention of teaching some branch of medical science by lectures. In 1744-5 he delivered a course, as appears from a letter from Dr. Hunter, and soon after entered into an arrangement with Dr. Johnstone, the professor of medicine in the university of that city, by which he was enabled, during the winter of 1746, to deliver a course of lectures on the theory and practice of medicine. Dr. Cullen also gave lectures on materia medica, botany and chemistry.

> "In the physic class," says Dr. Wallace in a letter to Dr. Thomson, "he never read lectures but only used notes; in the chemistry he sometimes read, but very seldom. To medical students, as a short text book, he gave out occasionally a manuscript half sheet, to be copied and circulated from one to another."

He appears at once to have abandoned the system of Boerhaave, whose institutions and aphorisms were then very generally employed as text books in the different medical schools of Europe; traced a course of instruction founded on personal knowledge of the subject, and delivered the same opinions with regard to the theory of fever, the humoral pathology and the nervous system, which have since appeared in his writings.

> "In entering upon the duties of a teacher of medicine, Dr. Cullen ventured to make another change in the established work of instruction, by laying aside the use of the Latin language in the composition and delivery of his lectures. This was considered by many as a rash innovation; and some desirous to detract from his reputation, or not sufficiently aware of the advantages attending this deviation from established practice, have insinuated that it was owing to Dr. Cullen's imperfect knowledge of the Latin that he was induced to employ the English language. But how entirely groundless such an insinuation is, must be apparent to every one at all acquainted with his early education, course of studies and habits of persevering industry."

Though Dr. Cullen was thus engaged in delivering lectures in the medical school of Glasgow, he was merely as a permitted teacher—not as a regular professor. In 1751 he received the appointment to the chair of medicine, through the influence of Archibald, Duke of Argyle, to whom he had been introduced a few years before. Dr. Cullen fulfilled the duties of that station until the year 1755. But at length harassed by an extensive and laborious but unprofitable practice, which deprived him of leisure for the successful cultivation of science, he became a candidate with Dr. Francis Home and Dr. Black for the chair of chemistry in the University of Edinburgh, and obtained the situation of joint professor with Dr. Plummer, after whose death he became sole professor. In 1757 Dr. Cullen undertook to deliver clinical lectures—a task in which he was aided by Dr. Whytt and Monro.

> "Dr. Cullen possessed in a remarkable degree the qualifications necessary for a clinical teacher. To a minute and extensive knowledge of all the auxiliary branches of medicine, and to the great experience which he had acquired by private practice, he added a peculiar talent for the observation and accurate

description of diseases, accompanied with a strong desire, and the ready power of communicating his knowledge in the most interesting manner to his pupils. During the whole of the eighteen years that he was occupied in lecturing on clinical medicine in the Royal Infirmary, he bestowed much time and most uncommon pains on the proper performance of that duty. Of the notes from which he spoke his clinical lectures, those of the first five years and of the eighth year have by some accident been lost; but those of the other twelve years have been preserved. In these notes, constant reference is made to the case-books and the daily reports of his patients, showing how closely he followed, and what use he made of these in his lectures. Besides having the histories of the cases of his clinical patients carefully drawn out by his assistants, and giving himself daily reports of their progress, and of the medicines prescribed, (all of which, conformably with the practice of the hospital, were inserted into journals open for the inspection of his students,) it appears from his manuscript clinical lectures that he was accustomed to write down, previously to lecturing, full notes of all those particulars respecting each individual case, the symptoms of the disease, its diagnosis, prognosis, and probable causes, and the effects produced upon it by the remedies employed, which appeared to him to require or deserve attention; together with an account of the morbid appearances observed after death in those cases which had a fatal termination; in short, to take notice of every circumstance which could tend in any way to awaken the observation, and to extend the practical knowledge of his students. Even his mistakes and errors in practice, as well as his skill and success, Dr. Cullen never failed to render available to these purposes."—Pp. 107, 108.

"Besides possessing high qualifications as a clinical lecturer, Dr. Cullen had the strongest motives to employ all the powers of his mind in this new field of professional exertion. His lectures on clinical medicine afforded the most favourable opportunity that could be desired of exhibiting publicly in Edinburgh his talents as a teacher of medicine, of evincing his skill and experience as a practical physician, and of establishing by those means a claim to the chair of the practice of physic, when it should become vacant by the resignation or demise of his colleague Dr. Rutherford.

"Endowed with these qualifications, and animated by these motives, Dr. Cullen speedily obtained great reputation as a teacher of clinical medicine, acquired the esteem and admiration of his students, and gained by his attention and kind manners the universal confidence of his patients. His lectures were distinguished by that simplicity, ingenuity, and comprehensiveness of view, which marked at all times the philosophical turn of his mind; and, as I have been informed by several eminent medical men who had an opportunity of attending them, and more particularly by one who acted as his clinical clerk in 1765,* were delivered with that clearness and copiousness of illustration with which in his lectures he ever instructed and delighted his auditors. It is to be regretted that the benefits of Dr. Cullen's clinical experience were for many years in a great measure confined to his own students; and that, from his other engagements and pursuits, he was prevented from giving the results of this experience in a more direct manner than that in which we now possess it in his works on Nosology, Materia Medica, and the Practice of Physic. Had these results been presented to the public in the form of clinical reports, like those of his contemporary De Haen, it is impossible that the erroneous assertion so often ignorantly repeated of Dr. Cullen's being merely a speculative teacher of practical medicine, could ever for a moment have been entertained by the foreign medical public. No teacher of practical medicine, as I shall have frequent occasion to show in the course of this narrative, was ever at more pains than Dr. Cullen to distinguish between well ascertained matters of fact and the assumptions and conclusions of hypothetical reasoning. In leading his students to reflect and to reason, it was his constant endeavour to teach them to observe the course of nature in diseases, to discriminate between their uniform and essential symptoms and their merely accidental combinations, and to ascertain, as far as is possible by observation and analytical reasoning, the respective influence of the remedies employed by art, and of the operations of nature in the cure of diseases."--Pp. 109-111.

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* "The late Dr. John Fleming, long a Member of the Medical Board of Calcutta."

On the death of Dr. Alston, the professor of materia medica, in 1760, shortly after that gentleman had commenced his lectures for the season, Dr. Cullen was petitioned by the students to undertake the duty of the chair. He readily complied with this request, and thereby had a new opportunity of evincing to the public the great extent of his medical knowledge and his power as a teacher. The lectures which he delivered on the occasion, excited a degree of interest that had seldom, if ever been produced by any other course on that subject. This was shown, Dr. T. remarks, not only by the applause they received from those who heard them, but also by the eager curiosity with which manuscript notes taken by his students were long sought for, multiplied and circulated amongst the medical profession in Europe.

> "It must have been in some measure to gratify this curiosity, that ten years after the period at which they were delivered, an incorrect edition of these lectures was, without Dr. Cullen's knowledge, published in London from the manuscript notes of some of his pupils; and not only translated into several of the languages of the continent, but republished in Dublin and in Edinburgh. The unwarrantable liberty which had been taken by the publication of his lectures, induced Dr. Cullen to apply to the court of chancery for an injunction to stop their sale; which was immediately granted." "As on inquiry, it appeared that the physician who had furnished the bookseller with the manuscript of the lectures was sensible of the error he had committed, and had had no pecuniary object in view by their publication, and as a considerable number of printed copies had already got into circulation, Dr. Cullen at length agreed to allow of the sale of the remaining copies on condition that he should receive a share of the profits, and that the grosser errors in the work should be corrected by the addition of a supplement." "But though on this occasion a great injury was done to Dr. Cullen's feelings, there was apparently none intended, and there certainly happened none by it to his professional reputation."

Great efforts were made by the friends of Dr. Cullen to induce Dr. Rutherford, the Professor of the Practice of Physic, then in advanced years and in declined health, to resign in his favour. But owing to the prejudices which that gentleman had imbibed against Dr. Cullen, those efforts were unavailing; and in 1766 Dr. Rutherford resigned in favour of Dr. John Gregory, who had held for several years the same office in King's College, Aberdeen, and who, though younger and less experienced as a teacher than Dr. Cullen, was still very justly considered as a physician of great learning and unquestionable talents. Dr. G. was immediately elected to that chair.

On the death of Dr. Whytt, which took place about two months after the election of Dr. Gregory, the vacancy thus caused in the chair of the Theory of Medicine was attempted by some of Dr. Cullen's friends, to be filled by the transfer of Dr. Gregory to that professorship, an arrangement which would have enabled them to place Dr. Cullen in the chair of the Practice. This arrangement however appears to have failed from the unwillingness of Dr. Gregory to become a candidate for the theoretical chair. Dr. Cullen and his friends had, it appears, been made to believe that the purpose of choosing Dr. Gregory as the successor of Rutherford, was to remove the objection made by him to Dr. C. and that the chair would be given to Dr. Cullen as soon as Dr. Gregory should be otherwise provided for. Their disappointment in relation to the failure of their efforts on this affair was in consequence extreme, and Dr. Cullen was with difficulty prevailed upon to accept the chair of the Theory of Physic. This, however, he at length consented to do, rather in compliance with the wishes of his friends, and in order to give the electors an opportunity of bringing Dr. Black into Edinburgh, than from any desire of his own to occupy that situation. He was accordingly elected to that office, and admitted Professor of the Institutes or Theory of Medicine on the 1st of November, 1766; and on the same day Dr. Black was admitted into the University as his successor in the Professorship of Chemistry.

An address was presented to the patrons of the university, signed by one hundred and sixty students, suggesting the propriety of a translation of Dr. Cullen to the chair of practice. This having failed, another address signed by one hundred and fifty-one students, was presented for the purpose of urging the propriety of electing Dr. Cullen and Dr. Gregory conjointly and severally Professors both of the Theory and Practice of Medicine. The proposal was at length adopted, and Dr. Gregory, after delivering three courses of lectures on the practice of physic, during the winter session of 1766-7, 1767-8, and 1768-9, was at length induced to comply with the general wish of those interested in the prosperity of the university, that Dr. Cullen should be permitted to lecture upon that subject. Accordingly we find that he delivered a short course of lectures on the practice of physic, in the summer of 1768, and—

> "During the remainder of Dr. Gregory's life, Dr. Cullen and Gregory continued to give alternate courses of the theory and practice of physic. On Dr. Gregory's death, which happened on the 10th of February, 1773, Dr. Cullen was appointed sole Professor of the Practice of Physic." "Such were the difficulties to be overcome, and such the exertions required to procure, first a place in the University of Edinburgh, and afterwards the proper situation in it, for the man whose genius, talents, and industry shed such a lustre over the institution, and contributed in so remarkable a degree to extend, and to perpetuate the fame of its medical school."

Dr. Thomson has devoted a very considerable portion of the volume before us to an examination of the three great systems of physic prevailing in the medical schools of Europe at the period when Dr. Cullen first began to deliver lectures on medicine at Glasgow—those of Stall, Hoffmann, and Boerhaave, as well as of the peculiar theories of Glisson, Haller, and Whytt. After doing this, he offers a very full account of the doctrines taught by Dr. Cullen, accompanied with copious extracts from his unpublished lectures.and other writings. We are precluded by our limits from following the learned biographer into details, and must content ourselves with a few words on that part of his work relating to Dr. Cullen.

The author remarks, that Dr. Cullen in succeeding to the chair that had been so ably filled by his colleague, Dr. Whytt, entered on the duty of teaching the Institutions of medicine with a reputation which it required the fullest exertion of his talents to support. To an intimate acquaintance with the theoretical and practical writings of his predecessors and contemporaries, he was known to unite a vigorous and discriminating understanding, matured by long continued observation and experience, with the most felicitous powers of exciting the curiosity and directing the pursuits and studies of his pupils.

"The success with which he taught the Institutions of medicine during the time he held that chair, redounded so much to the honour of the university and to his own fame, that his friends and admirers had ultimately more reason to rejoice at, than to regret the temporary disappointment he had experienced in not obtaining the chair of the practice of physic, which had been so long the object of his ambition."

He arranged the subjects of which he had occasion to treat in those lectures under the three general divisions of physiology, pathology, and therapeutics, comprehending the consideration of health, diseases, and remedy. In explaining the general objects of his course, he observed that the practice of physic is the art applied to particular diseases and cases, but that before considering this art in its application to particular diseases, certain general doctrines are necessary to be premised, which are called the Institutions of medicine. Some, he remarks, are pleased to call our present course the theory of physic.

"With regard to the common notion affixed to the term theory, I must say that I mean to deliver nothing in this course but what is applicable to the cure of diseases, which is the ultimate end of all our studies; what we are to deliver in this course will be applicable to practice."

"When gentlemen," he adds, "call this a course of theory, if they mean by that term a deduction of reasoning, and that founded upon hypothesis, we refuse the application; but if by theory they mean the general doctrines of the art of medicine, founded upon experience and observation, I allow you to call this the theory of physic. My general doctrines are to be so many general facts."

In thus upholding the necessity of general principles, affording a more correct definition of the term theory than is generally adopted, and establishing a distinction between that word and hypothesis, with which it is but too often confounded, Dr. Cullen advocated the same views which have been entertained by Sir Isaac Newton, Adam Smith, d'Alembert, Playfair, Dugald Stewart, and others, and helped to remove the vulgar prejudices which prevailed, and continue to a certain extent to prevail, even among medical men, in relation to the former of these terms.

Dr. Cullen divided the physiological part of his course into seven sections—the *first* comprehended an account of the general facts known with regard to the solid matter of which every organ of the body consists; the *second*, an account of the nervous system; the *third*, of the motion and circulation of the blood; the *fourth*, of the functions employed in supporting and repairing the several solid and fluid parts of the body; the *fifth*, of the *organs* employed in receiving and modifying the impressions of external bodies necessary to sensation; the *sixth*, of the motions of the several parts of the body which depend upon the action of muscles; and the *seventh*, of the functions peculiar to the sexes.

The most important and interesting portion of Dr. C.'s lectures on the theory of medicine, judging from his printed works on that subject, and from the extracts from his unpublished writings contained in the volume before us, is doubtless that relating to the doctrine of the functions and properties of the nervous system.

In combining, as Dr. Thomson remarks, the information relative to the nervous system, contained in the writings of his contemporaries, Haller, Whytt, and Gaubius, with the opinions which he had early adopted from the works of Hoffmann, Dr. Cullen seems to have constantly endeavoured to extend, improve, and methodize his knowledge of the functions of this system, and certainly in no part of his labours do the power of his mind appear to have been more successfully exerted. His speculations with regard to the different functions of that system, but more particularly with regard to that of the animal power or energy of the brain, were incorporated with every opinion which he taught concerning the phenomena of the animal economy, the causes of diseases, and the operation of medicine. They may be said to constitute a most important part, if not the sole basis, of that system of the practice of physic, which he made the subject of prelection, as well as of study, for a period of nearly forty years before he ventured to give it to the public. Of this division Dr. Thomson has given a very clear, methodical and detailed exposition—remarking that the general results of Dr. C.'s speculations upon this subject may be comprehended under the following heads:—1st. Of the nervous system considered as the connecting medium between the soul and body, or the immaterial and the material parts of man. 2d. Of the nervous system considered as the organ of sensation. 3d. As the organ of our intellectual operations, memory and judgment. 4th. As the organ of the voluntary, involuntary, mixed, and sympathetic motions of the animal economy. 5th. Of the different conditions of the nervous system in the states of sleeping and walking, and the doctrine of excitement and collapse. 6th, and lastly. The effects of custom upon our corporeal and mental functions.

It is impossible to give, in the narrow space allowed us, an analysis of Dr. Cullen's views on these various subjects, as they are presented by his biographer. Indeed, even could we command room we should not feel disposed to undertake the task, because in the volume before us, we find, not the lectures themselves, but an analytical exposition of them; and because, nothing being less easy than to offer an intelligible abridgment of an abstract, it would be beyond our power to compress Dr. Thomson's analysis to the degree that would be required for our purposes, and at the same time preserve the interest it excites when perused in its present form. Nevertheless, as Dr. Cullen's physiological writings are little read in this country, and as his views relative to the nervous system are not well known or sufficiently attended to, we shall offer no apology for subjoining a few extracts and remarks in illustration of some portions of his doctrine.

Dr. Thomson states that in considering mind and matter as respectively endowed with qualities essentially different, Dr. Cullen regarded the nervous system as the connecting medium between the mind, or immaterial thinking part of man, and the different organs of which his body is composed. But in expressing his opinions upon these subjects, he was particularly careful to guard himself from the charge of materialism. He observed, that in addition to the arguments by which Dr. Whytt has refuted that doctrine, the association of ideas—a very fundamental part of our intellectual operations, cannot be explained upon any supposed organization of matter.

Dr. Cullen held that our sensations may be divided into two kinds:—1st. Sensations which arise from the impulse or impression of external bodies, which he therefore names *sensations of impression.* 2d. Those which arise from the mind's being conscious of its own actions, and of the motions which it excites. These he named *sensations of consciousness.* This last was, he remarks, a new term in physiology; and it must be allowed, as Dr. Thomson states, that some such term was necessary, in order to comprehend under it a variety of feelings of the mind of which we are conscious, but which we are not able to trace to the impression of bodies external to the nervous system.

> "The sensations of consciousness," Dr. Cullen remarks, "may be referred to the following heads. 1st. Those of apperception, by which we are in general conscious of perceiving, remembering, judging, and willing, and thereby of our existence and identity. 2d. The sensations arising from the particular state of thinking, according as perception, memory and judgment are more or less clear, ready, or exact. 3d. The sensations arising from the particular state of volition, and its various modes. 4th. The sensations arising from the general state of the muscular action, as vigorous or weak, easy or difficult." "5th. The sensations arising from particular actions, or a consciousness of the actions excited, and of the motion of the different parts of the body. These also probably take place with regard to all the internal functions." "6th. The sensations arising from the diminution or absence of impressions. I will not say, he observes, that darkness is visible, but it is a positive sensation. The sensation of darkness or blackness is the absence of impression; it takes place when no rays of light fall on our eyes, so that the sensation of consciousness may be here separated from that of impression."

Dr. Cullen's observations on the properties of the solid matter of which every organ of the body consists, certainly evinces, as Dr. Thomson observes, great knowledge and ingenuity; but the manner of considering this subject has of late years been so completely changed by the discovery of the constituent parts of animal matter, and by the more accurate examination of the chemical and physical properties of each of the solid parts, as to render it now as unnecessary as it would be uninteresting to detail his particular opinions upon the subject.

> "It may be remarked, however, that he was aware that all animal matters may be ultimately traced to a vegetable origin; and he observes that, if we would inquire into the production of animal matter, we must first inquire in what manner vegetable matter may be converted into animal."

He regarded the moving or muscular fibres, as a continuation of the medullary substance and nerves, and therefore termed them the moving extremities of the nerves. He supported the same opinion as Haller respecting the identity of the sensory and motor nerves; and maintained that we must either allow these nerves to be the same, or suppose that there is no where a nerve of motion which is not accompanied with a nerve of sense that is inseparable from it. This objection, as our readers undoubtedly know, has no weight now; experiments having shown, that what Dr. Cullen held in the light of a gratuitous supposition, must be viewed as an incontrovertible fact. He rejected the hypothesis of the communication of motions through the different parts of the nervous system by means of vibrations of the nerves, or of a fluid secreted in the brain. Nevertheless he conceived with Hoffmann and others, that the agency of some subtile fluid in this system is necessary, in order to fit it for the communication of impressions from one part to another. This fluid he termed the *nervous fluid;* but without meaning, as he himself informs us, to determine any thing with regard to its source, nature, or manner of acting. Though he conceived the muscular fibres to be a portion of the nervous system, he was disposed to attribute the power of contractility which they possess, and which, he observed, is not possessed by any other portion of this system, to some peculiarity of their organization, without professing to explain in what this peculiarity consists, and on what physical change in the condition of muscular fibres, their contraction depends.

Dr. Thomson remarks, that though Dr. Cullen acknowledged it to be possible that the property of irritability may, as Haller and others had believed, reside entirely in the muscular fibre itself, independently of any influence derived from the nervous system, yet he maintained that in the production of all the voluntary, involuntary, and mixed motions of the animal economy, the muscular fibre is always more or less influenced by an energy derived from the nervous system.

"The vigour of the inherent or contractile power of the muscles," Dr. Cullen observes, "cannot be evident in a living animal, because we cannot be certain of its acting entirely without the nervous power; and, with regard to the strength with which a muscle contracts, I cannot undertake to show that, in different conditions of the body, as it is weakened by disease or by various other causes, or as it is increased by powers which have that effect, this contraction will be perceived to be manifestly different; and I shall have many occasions to prove that the tone of the inherent power is increased or diminished by causes acting upon the brain, and upon the brain alone."

To this influence of the nervous system upon the muscular, involuntary as well as voluntary, he gave the name of the *animal power or energy of the brain.* This term, he observes, has not been common in our systems of physic; but if, in all the communications that take place between the different parts of the body, much depends upon the present state of the brain, we will not be in any difficulty in lodging a particular power there, of which we shall speak under the name of animal power, or energy of the brain.

"This animal power we suppose to be seated in the brain, and only there seated. Whether you consider it, as Dr. Whytt did, as a sentient principle, or as automatic vital energy, depending upon the peculiar organization of all the several parts of the nervous system, it is probably the fundamental part of the system without which the functions cannot long remain."

In reference to the theory of sleeping and waking which teaches that in the latter state the animal spirits are gradually exhausted, whilst during sleep, on the other hand, they are recruited, Dr. Cullen observed, that it is embarrassed with many difficulties. He endeavoured to account for the alternate exercise and suspension of sense and motion, which occur in the two states in question, by an increased or diminished mobility, or a more or less excited state of the ethereal medium which Sir Isaac Newton had suggested as the cause of the phenomena of sense and motion. But he nevertheless regarded this explanation as an hypothesis and wished it to be received as such by his students. On this subject he says—

"'I take it for granted, that when you consider the weakness and manifest mistakes of any other hypothesis, you will readily, with me, think that the condition of the nerves, fitting them for the communication of motion, consists in some state of the matter of the nervous fluid itself, and of its having more or less mobility; in some cases being capable of being moved with more ease and vigour, while in other cases it is unfit for either. Now, I say, merely to avoid long expressions, I shall choose shorter ones, and shall speak of the moveable state of the nervous fluid, or of that condition of the nervous system which fits it for the communication of motion, under the term of its *excitement*, and a deficiency or less degree of this I shall call its *collapse*. Now, you must merely consider these as terms employed for what I take to be matters of fact, the increased or diminished force of the animal power or energy of the brain, and not as importing matters of theory, or as expressing any thing with regard to the nature of the nervous fluid, or wherein these different states of the nervous system consist. Whatever hypotheses I may have fancied to myself, I consider these as hypotheses still, and dare not trust you with them, unless you take them as they pass in my mind, and be very certain never to apply them in particular cases.'

"'I have been a little at a loss,' he observes, 'in the application of the terms of excitement and collapse. There is nothing more manifest than that the degree of excitement is very different upon different occasions; if we take the lowest, every higher degree than that must be called a degree of excitement; and if we take the highest degrees, and consider the lower degrees that may take place while life still subsists, every lower may be called a degree of collapse. The same ambiguity occurs with regard to the terms of heat and cold, which may be absolutely applied to the same individual state of bodies; and philosophers have not yet agreed where they should begin with applying the terms heat and cold; and so it may be with regard to the terms excitement and collapse. In saying that, in the ordinary state of waking men of health, the excitement is total with respect to the functions of the brain, but readily admits of diminution so as to produce the state of sleep, I mean,' continues Dr. Cullen, 'to settle the matter a little more exactly. I would call those states, states of excitement, where the excitement is total with regard to the functions of the brain, where there is in every part the general exercise of sense and volition. I know that there are many cases where there is a mixture of the excitement and the collapse, or of the increased and diminished energy of the brain, but I hold that to be the state of waking and of excitement, when the whole of the functions of the brain can be exercised; and, upon the contrary, whenever these functions are for the most part suspended, that I would call, more strictly, a state of collapse; and so upwards and downwards as it may occur. A degree of collapse, or diminished energy of the brain, takes place in the case of natural sleep; we call it a state of collapse when the excitement is partial, when the collapse prevails so far as to suspend very entirely the exercise of the functions of sense and volition, so that such a collapse takes place in sleep as is sufficient to weaken the general activity of the brain.'

"In extending his application of the doctrine of excitement and collapse to the morbid phenomena of the animal economy, Dr. Cullen made choice of mania and syncope, as two affections calculated to illustrate his opinions respecting these opposite states of strength and weakness, vigour and debility, sthenia and asthenia of the nervous system; the first, mania, being an example of a disease in which the excitement is increased above the natural standard; and the second, syncope, of one in which the excitement is reduced below that standard, or in which a degree of the state of collapse or diminished energy of the brain takes place." pp. 310–314.

Dr. Cullen was led to apply to the nervous system the terms *excitement* and *excitability* by a species of analogy derived from the theory of electricity, and the example of bodies in which electricity could be excited and accumulated; conceiving that the nervous fluid might, during life, be capable of excitation and discharge or exhaustion. This was perhaps suggested to him by the attempt which Sauvage had made to establish an analogy or identity between the supposed nervous fluid and electricity.

"Indeed Dr. Cullen himself, in assigning his reasons for believing that the motion exerted in the sentient extremity of a nerve in the process of sensation, must be of the oscillatory or vibratory kind, suggests that it may somehow depend upon an electric tremor."

The term collapse, Dr. Thomson thinks, was probably derived by Dr. Cullen from Bœrhaave, who, in stating what he conceived to be the proximate cause of sleep, says, that in so far as the solids are concerned, it is the compression or *collapse* of the smallest vessels of the brain, in consequence of which they cannot transmit their fluids.

The preceding details will be read with interest as conveying a correct idea of that part of the doctrine of Dr. Cullen, which has always been regarded as constituting one of its most remarkable features, and has been designated by continental writers under the appellation of the *theory of excitement.*

We have already dwelt so long on the physiological views of Dr. Cullen, that we have not sufficient space left for an exposition of his pathological doctrine. But we cannot refrain from presenting here a few details explanatory of his opinion relative to proximate causes, or morbid states, and to the diseases of the fluids. Proximate causes, according to him, are generally *compound*, consisting of different conditions in different parts of the animal economy, which all concur together in the case of actual diseases as they affect individuals. In a course of lectures on the practice of physic, proximate causes may be considered in this concurrence; but in pathology they must be taken separately. Such a consideration has given what pathologists have called the *morbi simpliciores.* As the proximate cause of a disease, he remarks, may consist in a fault either in the solid or in the fluid parts of the body, the diseased states are divided into those of the solids, and those of the fluids. The diseases of the solids are of two kinds; those of the solids as they are in common to the whole of the body, and those of the same solids as formed into various organic parts. This gives again what may be considered as the *morbi solidi simplicis,* and the *morbi organici.* Dr. Cullen considered it as a well-established fact that the fluids have a share in the performance of the natural functions and that their deviations have a share in disease. The *vitia fluidorum,* he adds, are therefore, agreeably to both ancient and moderns, properly considered in a general pathology, as proximate causes of diseases.

"But diseases properly consist in the *actiones læsæ,* and consequently there may be a great many deviations in the state of the fluids, from their most healthy state, without diseases being produced; it is only, as Gaubius says, when the solids are at length affected, that they form diseases. The pathologists, therefore, have been very improperly employed in considering only the affections of the fluids. Physicians have been accustomed so long to talk upon this subject, that they do not apprehend the mystery, as I would call it, in which it is involved; but it is still involved in a great deal of obscurity, and I think I cannot do better than to consider the subject as it lies in Gaubius, under the two heads of *morbi humorum absoluti* and *morbi humorum relativi,* the former comprehending changes in the coherence of the fluids, their vitiated qualities, and the vitiated states of the secretions; the latter changes in the quantity, in the place, and in the motion of the fluids. In commenting on Gaubius's divisions, I shall often have more to object to than to illustrate, but I could not attempt a system for myself, and it is to be presumed that Dr. Gaubius, who is a man of uncommon discernment and great erudition, has put the matter in as clear a light as is possible, and that in considering what he has written, we shall see at least the present state of our knowledge on this subject." p. 341.

In reading these and other extracts from his lectures on physiology, pathology, and therapeutics, contained in the volume before us, it is impossible to refuse admitting that Dr. Cullen possessed a very uncommon share of sagacity, originality, and ingenuity, combined with energy and soundness of judgment, and great learning.

"The imperfections of Cullen," as is remarked by judicious writers, "were the imperfections of the period in which he lived, and of the science itself, which it was his delight to cultivate; and if we are now in a situation to discover the blemishes of this luminary of medicine, it is chiefly by means of the refulgence which his genius has reflected on every object that lay within his range."

His doctrines, physiological and pathological, were soon adopted with more or less modifications and acknowledgment by almost all the physicians of Scotland and England, as well as by many continental writers; and it does not require much trouble to find, that most of the doctrines which have occupied the attention of the medical world since his times, those of Berlinghieri, Borsieri, Stoll, Blumenbach, Sprengel, Reil, Bichat, Pinel, &c. are greatly indebted to the views contained in his writings and developed in his lectures. It may be remarked also that M. De la Roche, in his *Analysis of the Functions of the Nervous System*, a work which excited considerable sensation in Europe, reproduced all the essential doctrines of Cullen on this subject, as a system of his own.

As we have already stated, the second volume of Dr. Thomson's work, which will present a continuation of the biographical details of Dr. Cullen, as well as an account of the publication of the first lines, and nosology, has not as yet made its appearance. The profession is, indeed, greatly indebted to Dr. T. for the very full, interesting, and valuable exposition he has given of the doctrine of Dr. Cullen, and for the history of the progress of medical science during the life of that eminent professor. No one was better qualified than Dr. T. for the performance of that difficult task, and those who peruse the work will we are sure cheerfully admit that he has done it the amplest justice. L.

XIV. *An Inquiry concerning the Indications of Insanity, with suggestions for the better Protection and Care of the Insane.* By John Conolly, M. D. Professor of Medicine in the University of London. London, 1830. pp. 496.

Dr. Conolly devotes his volume, as may be gathered from the above title, not to the general pathology and treatment of insanity, but merely to its diagnosis—to the means by which the practitioner discriminates the deranged from the sane mind, and decides upon the momentous question of liberty, with civil and social responsibility, or of coercion and a cell. Unquestionably this inquiry is fraught with a deep and painful interest—it is one of those in which society holds the deepest stake, and feels the most excited and laudable curiosity. Dr. Conolly had, at the period of his publication, devoted a share of his attention to this subject for many years, and for five of them had held the appointment of Inspecting Physician to the Lunatic Houses for the County of Warwick. He therefore, appears before us supported not only by his general reputation, but